

SHARP

SUPPLEMENTAL SERVICE MANUAL

S23M204R414HE



R-414HS

MICROWAVE OVEN

MODELS R-414HS

This is a supplemental Service Manual for Microwave Oven model R-414HS. This model is quite similar to the base models R426HS/R-426HK/R-426HW; (S13M203R426HE).

This supplemental manual must be used in conjunction with the base model service manual for complete operation, service, safety and replacement parts information.

In the interest of user-safety the oven should be restored to its original condition and only parts identical to those specified should be used.

WARNING TO SERVICE PERSONNEL: Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock. (High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..)

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SHARP ELECTRONCS CORPORATION

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Service Headquarters: Sharp Plaza, Mahwah, New Jersey, 07430-2135

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- (a) Do not operate or allow the oven to be operated with the door open.
- (b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary: (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
- (c) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- (d) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- (e) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

BEFORE SERVICING

Before servicing an operative unit, perform a microwave emission check as per the Microwave Measurement Procedure outlined in this service manual.

If microwave emissions level is in excess of the specified limit, contact SHARP ELECTRONICS CORPORATION immediately @1-800-237-4277.

If the unit operates with the door open, service person should 1) tell the user not to operate the oven and 2) contact SHARP ELECTRONICS CORPORATION and Food and Drug Administration's Center for Devices and Radiological Health immediately.

Service personnel should inform SHARP ELECTRONICS CORPORATION of any certified unit found with emissions in excess of $4\text{mW}/\text{cm}^2$. The owner of the unit should be instructed not to use the unit until the oven has been brought into compliance.

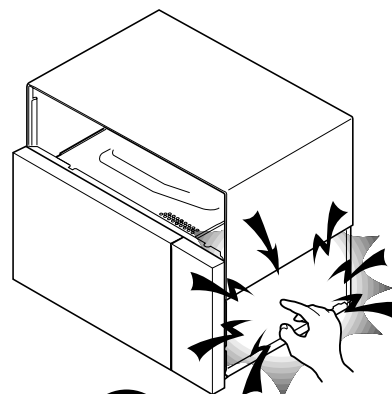
WARNING TO SERVICE PERSONNEL

Microwave ovens contain circuitry capable of producing very high voltage and current, contact with following parts may result in a severe, possibly fatal, electrical shock.

(Example)

High Voltage Capacitor, High Voltage Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness etc..

Read the Service Manual carefully and follow all instructions.



**Don't Touch !
Danger High Voltage**

Before Servicing



1. Disconnect the power supply cord , and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.

WARNING: RISK OF ELECTRIC SHOCK. DISCHARGE THE HIGH-VOLTAGE CAPACITOR BEFORE SERVICING.

The high-voltage capacitor remains charged about 60 seconds after the oven has been switched off. Wait for 60 seconds and then short-circuit the connection of the high-voltage capacitor (that is the connecting lead of the high-voltage rectifier) against the chassis with the use of an insulated screwdriver.

Whenever troubleshooting is performed the power supply must be disconnected. It may, in some cases, be necessary to connect the power supply after the outer case has been removed, in this event:

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that the leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, reconnect the power supply cord.

When the testing is completed,

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Reconnect the leads to the primary of the power transformer.
5. Reinstall the outer case (cabinet).
6. Reconnect the power supply cord after the outer case is installed.
7. Run the oven and check all functions.

After repairing

1. Reconnect all leads removed from components during testing.
2. Reinstall the outer case (cabinet).
3. Reconnect the power supply cord after the outer case is installed.
4. Run the oven and check all functions.

Microwave ovens should not be operated empty. To test for the presence of microwave energy within a cavity, place a cup of cold water on the oven turntable, close the door and set the power to HIGH and set the microwave timer for two (2) minutes. When the two minutes has elapsed (timer at zero) carefully check that the water is now hot. If the water remains cold carry out **Before Servicing** procedure and re-examine the connections to the component being tested.

When all service work is completed and the oven is fully assembled, the microwave power output should be checked and a microwave leakage test should be carried out.

MICROWAVE MEASUREMENT PROCEDURE

A. Requirements:

- 1) Microwave leakage limit (Power density limit): The power density of microwave radiation emitted by a microwave oven should not exceed $1\text{mW}/\text{cm}^2$ at any point 5cm or more from the external surface of the oven, measured prior to acquisition by a purchaser, and thereafter (through the useful life of the oven), $5\text{mW}/\text{cm}^2$ at any point 5cm or more from the external surface of the oven.
- 2) Safety interlock switches:
Primary interlock relay switch shall prevent microwave radiation emission in excess of the requirement as above mentioned. Secondary interlock relay and door sensing switch shall prevent microwave radiation emission in excess of $5\text{mW}/\text{cm}^2$ at any point 5cm or more from the external surface of the oven.

B. Preparation for testing:

Before beginning the actual measurement of leakage, proceed as follows:

- 1) Make sure that the actual instrument is operating normally as specified in its instruction booklet.

Important:

Survey instruments that comply with the requirement for instrumentation as prescribed by the performance standard for microwave ovens, 21 CFR 1030.10(c)(3)(i), must be used for testing.

- 2) Place the oven tray in the oven cavity.
- 3) Place the load of $275 \pm 15\text{ ml}$ (9.8 oz) of tap water initially at $20 \pm 5^\circ\text{C}$ (68°F) in the center of the oven cavity.
The water container shall be a low form of 600 ml (20 oz) beaker with an inside diameter of approx. 8.5 cm (3-1/2 in.) and made of an electrically nonconductive material such as glass or plastic.
The placing of this standard load in the oven is important not only to protect the oven, but also to insure that any leakage is measured accurately.
- 4) Set the cooking control on Full Power Cooking Mode.
- 5) Close the door and select a cook cycle of several minutes. If the water begins to boil before the survey is completed, replace it with 275 ml of cool water.

C. Leakage test:

Closed-door leakage test (microwave measurement):

- 1) Grasp the probe of the survey instrument and hold it perpendicular to the gap between the door and the body of the oven.
- 2) Move the probe slowly, not faster than 1 in./sec. (2.5 cm/sec.) along the gap, watching for the maximum indication on the meter.
- 3) Check for leakage at the door screen, sheet metal seams and other accessible positions where the continuity of the metal has been breached (eg., around the switches, indicator, and vents).
While testing for leakage around the door, pull the door away from the front of the oven as far as is permitted by the closed latch assembly.
- 4) Measure carefully at the point of highest leakage and make sure that the highest leakage is no greater than $4\text{mW}/\text{cm}^2$, and that the primary interlock switch/secondary interlock relay does turn the oven OFF before any door movement.

NOTE: After servicing, record data on service invoice and microwave leakage report.

SUPPLEMENTAL SERVICE MANUAL

SHARP

MICROWAVE OVEN

R-414HS

FOREWORD

This supplemental Manual has been prepared to provide Sharp Electronics Corp. Service Personnel with Operation and Service Information for the SHARP MICROWAVE OVEN; R-414HS.

The model R-414HS is quite similar to base models R-426HS/R-426HK/R-426HW (Ref.# S13M203R426HE).

Check the interlock switches and the door seal carefully. Special attention should be given to avoid electrical shock and microwave radiation hazard.

WARNING

Never operate the oven until the following points are ensured:

- (A) The door is tightly closed.
- (B) The door brackets and hinges are not defective.
- (C) The door packing is not damaged.
- (D) The door is not deformed or warped.
- (E) There is no other visible damage with the oven.

Servicing and repair work must be carried out only by trained service personnel.

DANGER

Certain initial parts are intentionally not grounded and present a risk of electrical shock only during servicing. Service personnel - Do not contact the following parts while the appliance is energized;

**High Voltage Capacitor, Power Transformer, Magnetron, High Voltage Rectifier Assembly, High Voltage Harness;
If provided, Vent Hood, Fan assembly, Cooling Fan Motor.**

All the parts marked "*" on parts list are used at voltages more than 250V.

Removal of the outer wrap gives access to voltage above 250V.

All the parts marked "Δ" on parts list may cause undue microwave exposure, by themselves, or when they are damaged, loosened or removed.

PRODUCT DESCRIPTION

GENERAL INFORMATION

TOUCH CONTROL PANEL

WIRING DIAGRAM

PARTS LIST

SHARP ELECTRONICS CORPORATION

SHARP PLAZA, MAHWAH,
NEW JERSEY 07430-2135

SPECIFICATION

ITEM	DESCRIPTION
Power Requirements	120 Volts 13.3 Amperes, 1550 watts 60 Hertz Single phase, 3 wire grounded
Power Output	1100 watts (IEC TEST METHOD) Operating frequency of 2450MHz
Case Dimensions	Width 21-11/16" Height 12-3/8" Depth 17-3/8"
Cooking Cavity Dimensions 1.4 Cubic Feet	Width 15" Height 9-7/16" Depth 16-3/4"
Control Complement	Touch Control System Clock (1:00 - 12:59) Timer (0 - 99 min. 99 seconds) Microwave Power for Variable Cooking Repetition Rate; P-HI Full power throughout the cooking time P-90 approx. 90% of Full Power P-80 approx. 80% of Full Power P-70 approx. 70% of Full Power P-60 approx. 60% of Full Power P-50 approx. 50% of Full Power P-40 approx. 40% of Full Power P-30 approx. 30% of Full Power P-20 approx. 20% of Full Power P-10 approx. 10% of Full Power P-0 No power throughout the cooking time Keep warm pad, Popcorn pads, Reheat pads, Number selection pads, Power Level pad, Timer/Clock pad, Hot Water, Cook center pads and Defrost center.
Oven Cavity Light	Yes
Safety Standard	UL Listed FCC Authorized DHHS Rules, CFR, Title 21, Chapter 1, Subchapter J

GENERAL INFORMATION

GROUNDING INSTRUCTIONS

This oven is equipped with a three prong grounding plug. It must be plugged into a wall receptacle that is properly installed and grounded in accordance with the National Electrical Code and local codes and ordinances. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.

WARNING: Improper use of the grounding plug can result in a risk of electric shock.

Electrical Requirements

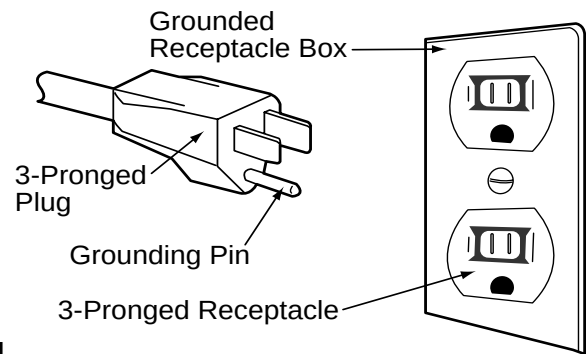
The electrical requirements are a 120 volt 60 Hz, AC only, 15 or 20 amp. fused electrical supply. It is recommended that a separate circuit serving only this appliance be provided. When installing this appliance, observe all applicable codes and ordinances.

A short power-supply cord is provided to reduce risks of becoming entangled in or tripping over a longer cord.

Where a two-pronged wall-receptacle is encountered, it is the personal responsibility and obligation of the customer to contact

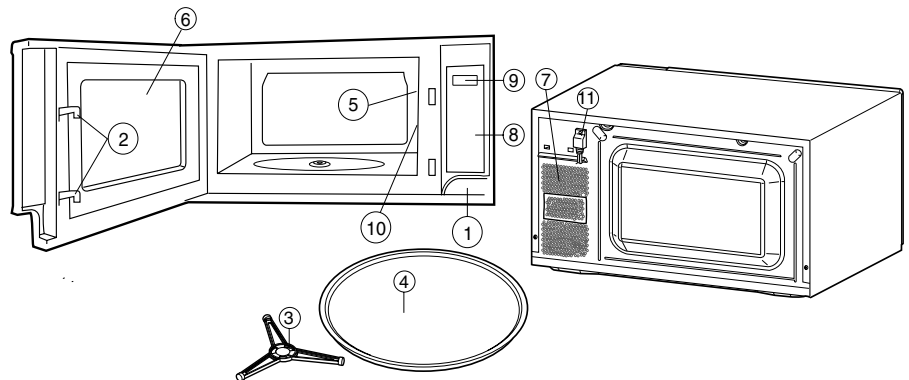
a qualified electrician and have it replaced with a properly grounded three-pronged wall receptacle or have a grounding adapter properly grounded and polarized. If the extension cord must be used, it should be a 3-wire, 15 amp. or higher rated cord. Do not drape over a countertop or table where it can be pulled on by children or tripped over accidentally.

CAUTION: DO NOT UNDER ANY CIRCUMSTANCES CUT OR REMOVE THE ROUND GROUNDING PRONG FROM THIS PLUG.



OVEN DIAGRAM

1. One touch door open button.
Push to open door.
2. Door latches.
The oven will not operate unless the door is securely closed.
3. Removable turntable support.
4. Removable turntable.
The turntable will rotate clockwise or counterclockwise.
5. Oven lamp.
It will light when oven is operating or door is opened.
6. Oven door with see-through window.
7. Ventilation openings. (Rear)
8. Auto-Touch control panel.
9. Time display: Digital display, 99 minutes 99 seconds.



10. Wave guide cover.
11. Power supply cord

TOUCH CONTROL PANEL



NOTE:

The directed features are disabled after one minute when the oven is not in use. These features are automatically enabled when the door is opened and closed or the STOP/CLEAR pad is pressed.

TEST PROCEDURES

PROCEDURE LETTER	COMPONENT TEST
I	<u>TOUCH CONTROL PANEL ASSEMBLY TEST</u> The touch control panel consists of circuits including semiconductors such as LSI, ICs, etc. Therefore, unlike conventional microwave ovens, proper maintenance cannot be performed with only a voltmeter and ohmmeter. In this service manual, the touch control panel assembly is divided into two units, Control Unit and Key Unit, and also the Control Unit is divided into two units, LSI Unit and Power Unit, and troubleshooting by unit replacement is described according to the symptoms indicated. Before testing, 1) Disconnect the power supply cord, and then remove outer case. 2) Open the door and block it open. 3) Discharge high voltage capacitor. 4) Disconnect the leads to the primary of the power transformer. 5) Ensure that these leads remain isolated from other components and oven chassis by using insulation tape. 1. Key Unit. NOTE ; 1) Re-install the outer case (cabinet). 2) Reconnect the power supply cord after the outer case is installed. 3) Run the oven and check all functions. The following symptoms indicate a defective key unit. a) When touching the pads, a certain pad produces no signal at all. b) When touching a number pad, two figures or more are displayed. c) When touching the pads, sometimes a pad produces no signal. 2. Control Unit The following symptoms indicate a defective control unit. 2-1 In connection with pads. a) When touching the pads, a certain group of pads do not produce a signal. b) When touching the pads, no pads produce a signal. 2-2 In connection with indicators a) At a certain digit, all or some segments do not light up. b) At a certain digit, brightness is low. c) Only one indicator does not light. d) The corresponding segments of all digits do not light up; or they continue to light up. e) Wrong figure appears. f) A certain group of indicators do not light up. g) The figure of all digits flicker. 2-3 Other possible problems caused by defective control unit. a) Buzzer does not sound or continues to sound. b) Clock does not operate properly. c) Cooking is not possible. 3. If the Key unit or the Control unit is defective. 1) Disconnect the power supply cord, and then remove outer case. 2) Open the door and block it open. 3) Discharge high voltage capacitor. 4) Replace the Control unit assembly. 5) Reconnect all leads removed from components during testing. 6) Re-install the outer case (cabinet). 7) Reconnect the power supply cord after the outer case is installed. 8) Run the oven and check all functions. 4. When testing is completed, 1) Disconnect the power supply cord, and then remove outer case. 2) Open the door and block it open. 3) Discharge high voltage capacitor. 4) Reconnect all leads removed from components during testing. 5) Re-install the outer case (cabinet).

TEST PROCEDURES

PROCEDURE LETTER

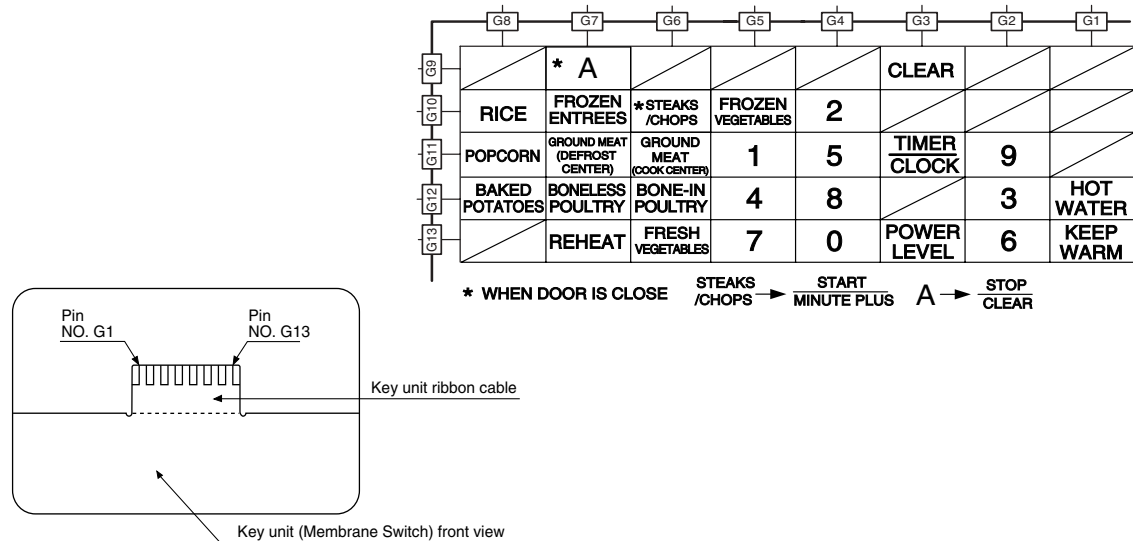
COMPONENT TEST

- 6) Reconnect the power supply cord after the outer case is installed.
- 7) Run the oven and check all functions.

J

KEY UNIT TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Using an ohmmeter and referring to the key unit matrix indicated on the control unit circuit, check the circuit between the pins of the key unit that correspond to the STOP/CLEAR pad. When the pad is pressed, the ohmmeter should indicate short circuit. When the pad is released, the ohmmeter should indicate open circuit. If incorrect readings are obtained, the key unit is faulty and must be replaced. About the other pads, the above method may be used.
5. Reconnect all leads removed from components during testing.
6. Re-install the outer case (cabinet).
7. Reconnect the power supply cord after the outer case is installed.
8. Run the oven and check all functions.



K

RELAY TEST

1. Disconnect the power supply cord, and then remove outer case.
2. Open the door and block it open.
3. Discharge high voltage capacitor.
4. Disconnect the leads to the primary of the power transformer.
5. Ensure that these leads remain isolated from other components and oven chassis by using insulation tape.
6. After that procedure, re-connect the power supply cord.
7. Remove the outer case and check voltage between the normal open terminal of the relay RY1 and the normal open terminal of the relay RY2 on the control unit with an A.C. voltmeter. The meter should indicate 120 volts, if not check oven circuit.

RY1 and RY2 Relay Test

These relays are operated by D.C. voltage

Check voltage at the relay coil with a D.C. voltmeter during the microwave cooking operation.

DC. voltage indicated Defective relay.

DC. voltage not indicated Check diode which is connected to the relay coil. If diode is good, control unit is defective.

RELAY SYMBOL	OPERATIONAL VOLTAGE	CONNECTED COMPONENTS
RY1	Approx. 12.0V D.C.	Oven lamp / Turntable motor / Cooling fan motor
RY2	Approx. 12.0V D.C.	Power transformer

8. Disconnect the power supply cord, and then remove outer case.
9. Open the door and block it open.
10. Discharge high voltage capacitor.
11. Reconnect all leads removed from components during testing.
12. Re-install the outer case (cabinet).
13. Reconnect the power supply cord after the outer case is installed.
14. Run the oven and check all functions.

TOUCH CONTROL PANEL ASSEMBLY

OUTLINE OF TOUCH CONTROL PANEL

The touch control section consists of the following units.

- (1) Key Unit
- (2) Control Unit (The Control Unit consists of Power Unit and LSI Unit).

The principal functions of these units and the signals communicated among them are explained below.

Key Unit

The key unit is composed of a matrix, signals generated in the LSI are sent to the key unit through P20-P27.

When a key pad is touched, a signal is completed through the key unit and passed back to the LSI through P70, P71, P41, P45, P47 and AN3 to perform the function that was requested.

Control Unit

Control unit consists of LSI, reset circuit, indicator circuit, power source circuit, relay circuit, buzzer circuit, synchronizing signal circuit and back light circuit.

1) Reset Circuit

This circuit generates a signal which resets the LSI to the initial state when power is supplied.

2) Indicator Circuit

This circuit consists of 22 segments and 3 common electrodes using a Liquid Crystal Display.

3) Power Source Circuit

This circuit generates voltages necessary in the control unit from the AC line voltage.

In addition, the synchronizing signal is available in order to compose a basic standard time in the clock circuit.

Symbol	Voltage	Application
VSS	-5V	LSI(IC1)

4) Relay Circuit

A circuit to drive the magnetron, fan motor, turntable motor and light the oven lamp.

5) Buzzer Circuit

The buzzer is responsive to signals from the LSI to emit audible sounds (key touch sound and completion sound).

6) Synchronizing Signal Circuit

The power source synchronizing signal is available in order to compose a basic standard time in the clock circuit.

It accompanies a very small error because it works on commercial frequency.

7) Door Sensing Switch

A switch to "tell" the LSI if the door is open or closed.

8) Back Light Circuit

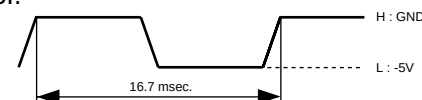
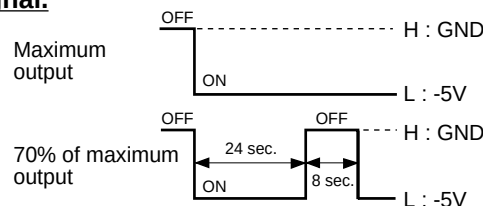
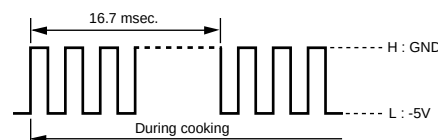
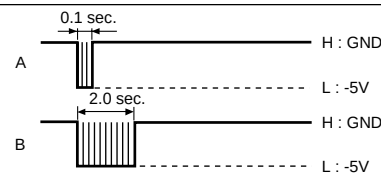
A circuit to drive the back light (Light emitting diodes LD1-LD4).

DESCRIPTION OF LSI

LSI

The I/O signal of the LSI is detailed in the following table.

Pin No.	Signal	I/O	Description
1-2	VL2-VL1	IN	Power source voltage input terminal. Standard voltage for LCD.
3-6	AN7-AN4	IN	Terminal to change cooking input according to the Model. By using the A/D converter contained in the LSI, DC voltage in accordance with the Model in operation is applied to set up its cooking constant.
7	AN3	IN	Signal coming from touch key. When either G13 line on key matrix is touched, a corresponding signal out of P20 - P27 will be input into AN3. When no key is touched, the signal is held at "H" level.
8	AN2	IN	To input signal which communicates the door open/close information to LSI. Door close "H" level signal (0V). Door Open "L" level (-5V).
9	AN1	IN	Terminal not used.
10	AN0	IN	Terminal not used.
11-13	P57-P55	OUT	Terminal not used.
14	CNTR0	OUT	Signal to sound buzzer (2.0 kHz). A: key touch sound. B: Completion sound.
15	P53	OUT	Terminal not used.
16	P52	OUT	Oven lamp, fan motor and turntable motor driving signal To turn on and off shut off relay (RY1). The square waveform voltage is delivered to the RY1 driving circuit and RY2 control circuit.
17	P51	OUT	Terminal not used.
18	P50	OUT	Magnetron high-voltage circuit driving signal. To turn on and off the cook relay (RY2). The signals holds "L" level during microwave cooking and "H" level while not cooking. In other cooking modes (variable cooking) the signal turns to "H" level and "L" level in repetition according to the power level.
19	P47	IN	Signal similar to AN3. When either G13 line on key matrix is touched, a corresponding signal will be input into P46.
20	P46	OUT	Terminal not used.
21	P45	IN	Signal similar to AN3. When either G12 line on key matrix is touched, a corresponding signal will be input into P45.
22-23	P44-P43	OUT	Terminal not used.
24	INT0	IN	Signal synchronized with commercial power source frequency. This is the basic timing for time processing of LSI.



Pin No.	Signal	I/O	Description
25	P41	IN	<u>Signal similar to AN3.</u> When either G11 line on key matrix is touched, a corresponding signal will be input into P41.
26	P40	IN	Connected to GND through the pull-down resistor.
27	RESET	IN	<u>Auto clear terminal.</u> Signal is input to reset the LSI to the initial state when power is applied.
28	P71	IN	<u>Signal similar to AN3.</u> When either G10 line on key matrix is touched, a corresponding signal will be input into P71.
29	P70	IN	<u>Signal similar to AN3.</u> When either G9 line on key matrix is touched, a corresponding signal will be input into P70.
30	XIN	IN	<u>Internal clock oscillation frequency control input setting.</u> The internal clock frequency is set by inserting the ceramic filter oscillation circuit with respect to XOUT terminal.
31	XOUT	OUT	<u>Internal clock oscillation output.</u> Output to control oscillation input to XIN.
32	VSS	IN	<u>Power source voltage : -5.0V.</u> The power source voltage to the drive LSI is input to VSS terminal.
33	P27	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G8 line keys on key matrix is touched.
34	P26	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G7 line keys on key matrix is touched.
35	P25	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G6 line keys on key matrix is touched.
36	P24	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G5 line keys on key matrix is touched.
37	P23	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G4 line keys on key matrix is touched.
38	P22	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G3 line keys on key matrix is touched.
39	P21	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G2 line keys on key matrix is touched.
40	P20	OUT	<u>Key strobe signal.</u> Signal applied to touch-key section. A pulse signal is input to P70, P71, P41, P45, P47 and AN3 terminal while one of G1 line keys on key matrix is touched.
41	P17	OUT	<u>Back light signal.</u> (Light emitting diodes) driving signal
42-46	P16-P12	OUT	Terminal not used.
47-50	SEG25-SEG22	OUT	Terminal not used.
51-72	SEG21-SEG0	OUT	<u>Segment data signal.</u>

Pin No.	Signal	I/O	Description																																																
			Connected to LCD. The relation between signals are as follows: <table> <thead> <tr> <th>LSI signal (Pin No.)</th><th>LCD (Pin No.)</th><th>LSI signal (Pin No.)</th><th>LCD (Pin No.)</th></tr> </thead> <tbody> <tr> <td>SEG0 (72)</td><td>SEG 0</td><td>SEG11 (61)</td><td>SEG 11</td></tr> <tr> <td>SEG1 (71)</td><td>SEG 1</td><td>SEG12 (60)</td><td>SEG 12</td></tr> <tr> <td>SEG2 (70)</td><td>SEG 2</td><td>SEG13 (59)</td><td>SEG 13</td></tr> <tr> <td>SEG3 (69)</td><td>SEG 3</td><td>SEG14 (58)</td><td>SEG 14</td></tr> <tr> <td>SEG4 (68)</td><td>SEG 4</td><td>SEG15 (57)</td><td>SEG 15</td></tr> <tr> <td>SEG5 (67)</td><td>SEG 5</td><td>SEG16 (56)</td><td>SEG 16</td></tr> <tr> <td>SEG6 (66)</td><td>SEG 6</td><td>SEG17 (55)</td><td>SEG 17</td></tr> <tr> <td>SEG7 (65)</td><td>SEG 7</td><td>SEG18 (54)</td><td>SEG 18</td></tr> <tr> <td>SEG8 (64)</td><td>SEG 8</td><td>SEG19 (53)</td><td>SEG 19</td></tr> <tr> <td>SEG9 (63)</td><td>SEG 9</td><td>SEG20 (52)</td><td>SEG 20</td></tr> <tr> <td>SEG10 (62)</td><td>SEG 10</td><td>SEG21 (51)</td><td>SEG 21</td></tr> </tbody> </table>	LSI signal (Pin No.)	LCD (Pin No.)	LSI signal (Pin No.)	LCD (Pin No.)	SEG0 (72)	SEG 0	SEG11 (61)	SEG 11	SEG1 (71)	SEG 1	SEG12 (60)	SEG 12	SEG2 (70)	SEG 2	SEG13 (59)	SEG 13	SEG3 (69)	SEG 3	SEG14 (58)	SEG 14	SEG4 (68)	SEG 4	SEG15 (57)	SEG 15	SEG5 (67)	SEG 5	SEG16 (56)	SEG 16	SEG6 (66)	SEG 6	SEG17 (55)	SEG 17	SEG7 (65)	SEG 7	SEG18 (54)	SEG 18	SEG8 (64)	SEG 8	SEG19 (53)	SEG 19	SEG9 (63)	SEG 9	SEG20 (52)	SEG 20	SEG10 (62)	SEG 10	SEG21 (51)	SEG 21
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73	VCC	IN	Power source voltage : GND(0V).																																																
74	VREF	IN	<u>A/D converter power source voltage : GND(0V).</u> The power source voltage to drive the A/D converter. Connected to GND.																																																
75	AVSS	IN	<u>A/D converter power source voltage : -5.0V.</u> The power source voltage to drive the A/D converter.																																																
76	COM3	OUT	Terminal not used.																																																
77	COM2	OUT	<u>Common data signal.</u> Connected to LCD signal COM1.																																																
78	COM1	OUT	<u>Common data signal.</u> Connected to LCD signal COM2.																																																
79	COM0	OUT	<u>Common data signal.</u> Connected to LCD signal COM3.																																																
80	VL3	IN	<u>Power source voltage input terminal.</u> Standard voltage for LCD. Connected to GND.																																																

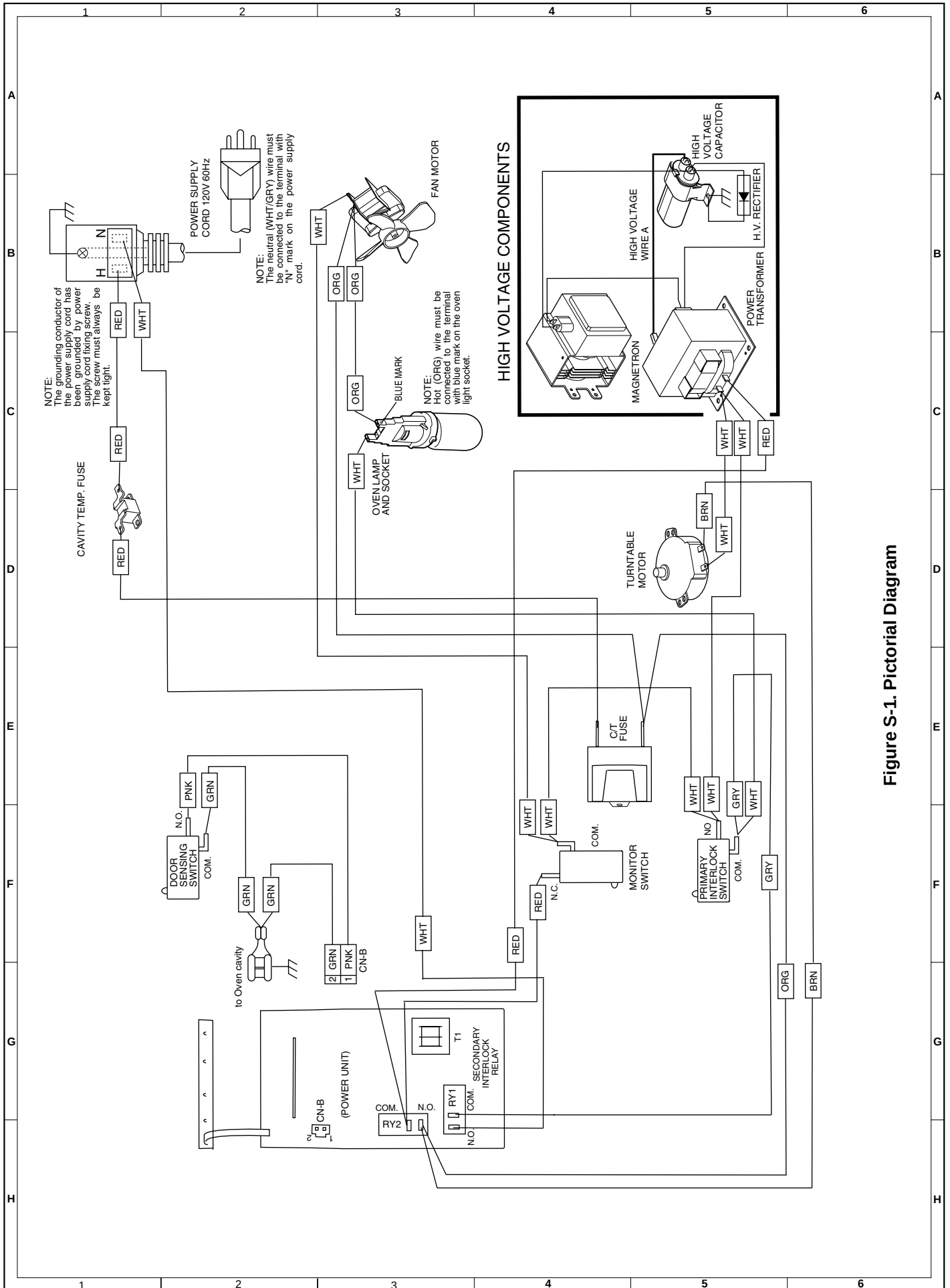


Figure S-1. Pictorial Diagram

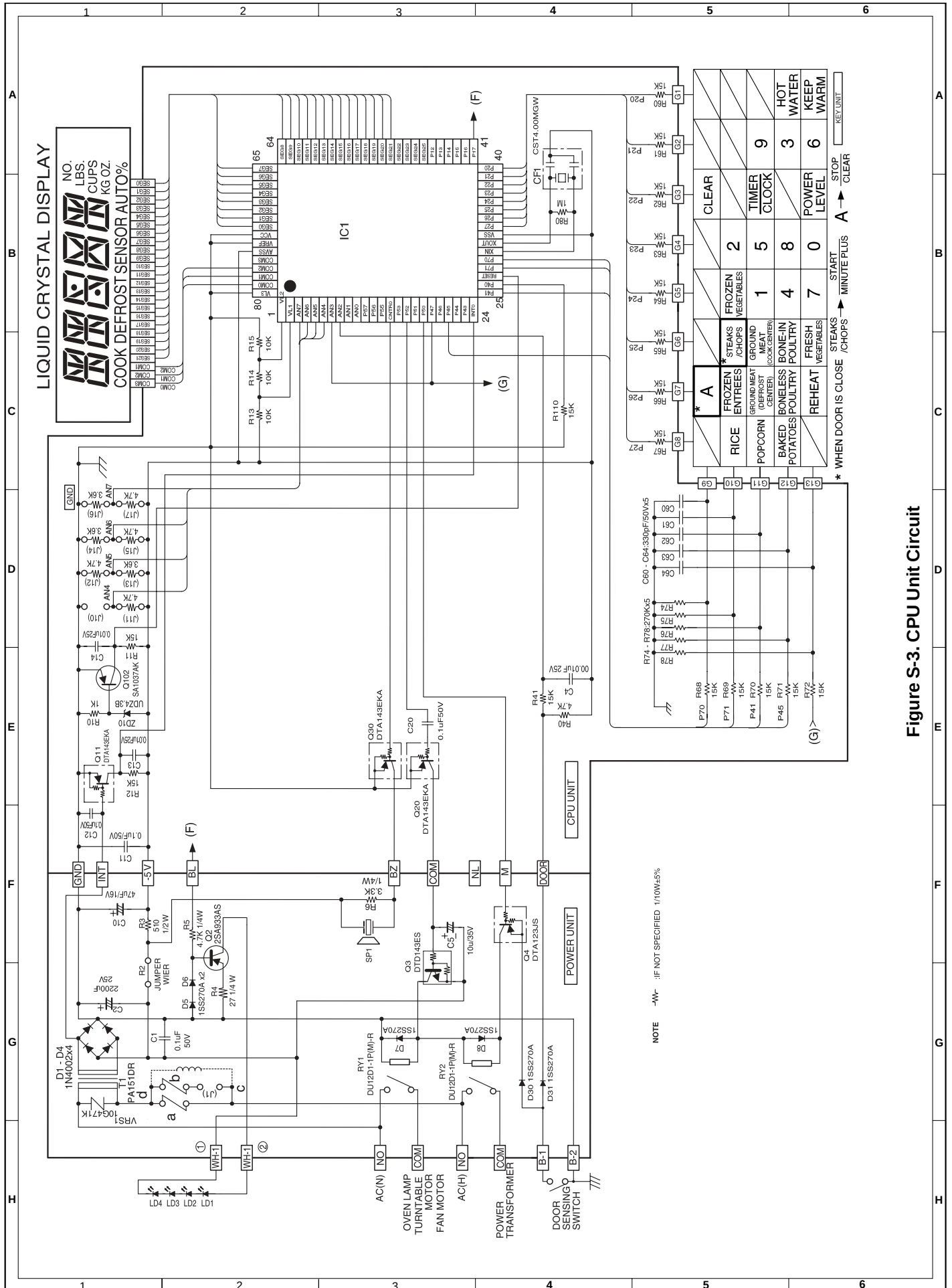


Figure S-3. CPU Unit Circuit

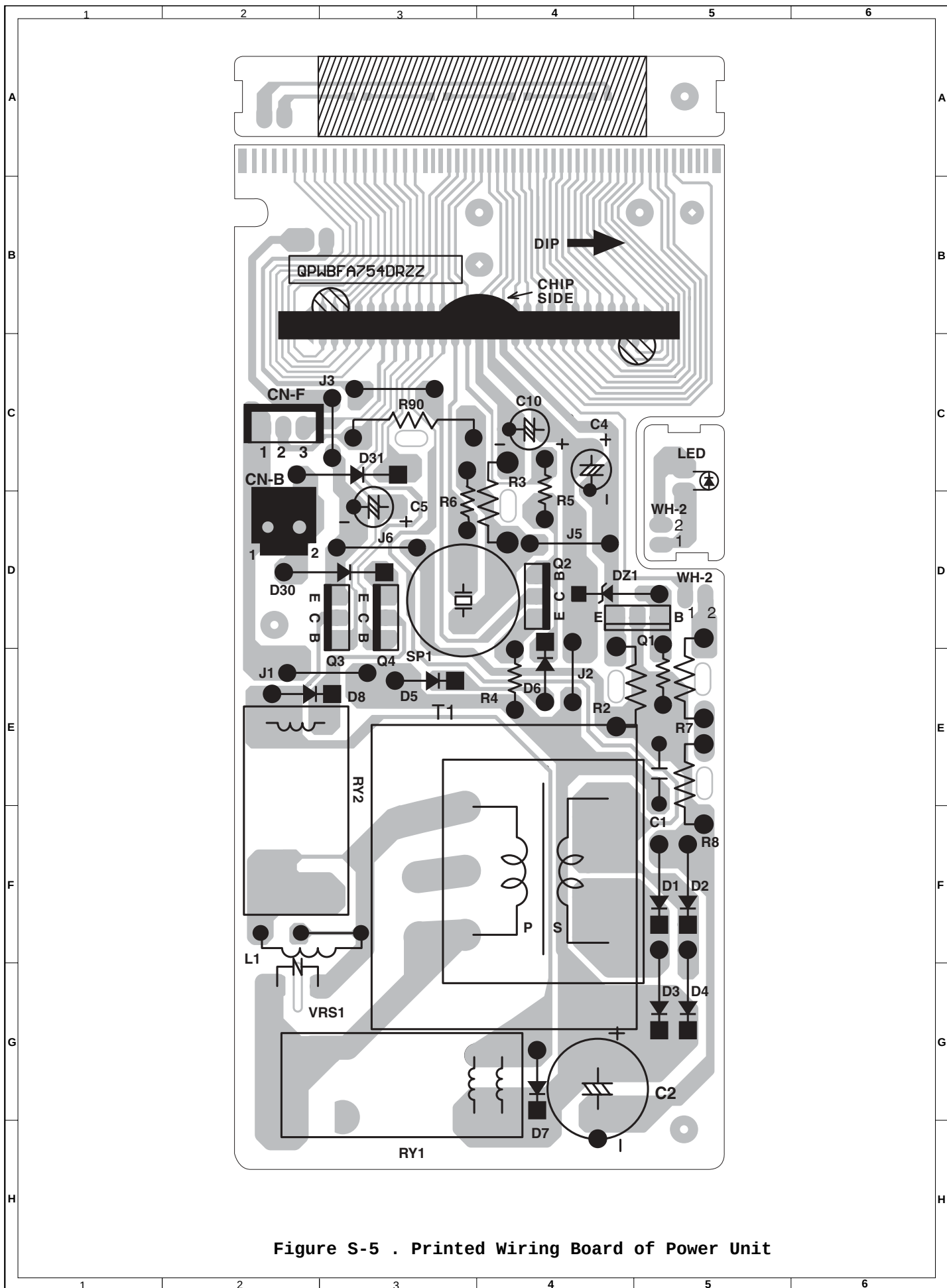


Figure S-5 . Printed Wiring Board of Power Unit

PARTS LIST

Note: The parts marked "Δ" may cause undue microwave exposure.

The parts marked "*" are used in voltage more than 250V. "S" MARK: PARTS DELIVERY SECTION.

REF. NO.	PART NO.	S	DESCRIPTION	Q'TY	CODE
ELECTRIC PARTS					
* 1- 1	RC-QZB018MRE0	M	High voltage capacitor	1	AQ
* 1- 2	FH-DZB013MRY0	M	High voltage rectifier assembly	1	AK
1- 3	QSOCLB006MRE0	M	Oven lamp socket	1	AE
1- 4	RLMPTA081WRZZ	M	Oven lamp	1	AD
1- 5	RMOTEA346WRE0	M	Fan motor	1	AR
1- 6	FFS-BA019/KIT	M	Monitor switch (V-16G-2C25), C/T fuse (20A 250V AC) & Inst.	1	AF
1- 7	QSW-MA085WRE0	M	Primary interlock switch and door sensing switch (V-5230Q)	2	AE
1- 8	QFS-TA014WRE0	M	Cavity temperature fuse 150°C	1	AF
* Δ 1- 9	RV-MZA293WRE0	M	Magnetron	1	BC
1-10	RMOTDA211WRE0	M	Turntable motor	1	AL
* 1-11	RTRN-B077MRE0	M	Power transformer	1	AZ
1-12	FACCDDB003MRE0	M	Power supply cord	1	AM
CABINET PARTS					
2- 1	GDAI-B068MRP0	M	Base plate	1	AN
2- 2	GLEGPB004MRF0	M	Foot	4	AB
2- 3	GCABUB091MRP0	M	Outer case cabinet	1	AX
CONTROL PANEL PARTS					
3- 1	GPNLCB040/KIT	M	Control unit assy	1	BA
3- 2	HPNLFB001MRF0A	M	Control panel frame	1	AD
3- 3	PSHEPB117MRR0	M	Graphic sheet	1	AG
3- 4	FDECAB037MRK0	M	Open button	1	AF
3- 5	MSPRTA050WRE0	M	Open button spring	1	AA
3- 6	XEPSD30P06XS0	M	Screw; 3mm x 10mm	5	AA
OVEN PARTS					
4- 1	LBNDKB007MRP0	M	H.V. Capacitor band	1	AB
4- 2	LANGTB060MRP0	M	Chassis support	1	AD
4- 3	PHOK-B018MRF0	M	Latch hook	1	AF
4- 4	MLEVPB016MRF0	M	Switch lever	1	AD
4- 5	PDUC-B120MRF0A	M	Magnetron duct	1	AM
4- 6	NFANPB001MRE0	M	Fan blade	1	AC
4- 7	PDUC-B088MRF0	M	Fan duct	1	AC
4- 8	-----	M	Oven cavity (Not a replaceable part)	1	--
4- 9	PCOVBP073MRP0	M	Waveguide cover	1	AC
4-10	PPACGB014MRF0	M	Turntable motor packing	1	AA
4-11	PCUSGB033MRP0	M	Cushion	1	AA
DOOR PARTS					
Δ 5 -1	DDORFB081MRK0	M	Door frame assembly (Ref. No. 5-6/5-7 not included)	1	BD
Δ 5 -1-1	LSTPPB023MRF0	M	Latch head	1	AC
5 -1-2	MSPRTA046WRE0	M	Latch spring	1	AB
Δ 5 -2	FDORFB074MRT0	M	Door panel	1	AQ
5- 3	PSHEPB021MRE0	M	Sealer film	1	AE
Δ 5- 4	GCOVHB046MRF0	M	Choke cover	1	AG
5- 5	FCOV-B235MRK0	M	Door screen	1	BC
5- 6	JBTN-B152MRF0A	M	Start/Stop button assy	2	AD
5- 7	MSPRTB022MRE0	M	Button spring	2	AC
5- 8	XCPD30P08000	M	Screw	1	AA

REF. NO.	PART NO.	§	DESCRIPTION	Q'TY	CODE
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MISCELLANEOUS

6- 1	FW-VZB125MRE0	M	Stop switch harness	1	AM
6- 2	FW-VZB192MRE0	M	Main wire harness	1	AU
6- 3	FR0LPB025MRK0	M	Turntable support	1	AN
6- 4	NTNT-A108WREZ	M	Turntable tray	1	AM
6- 5	TCAUAB045MRR0	M	Monitor caution label	1	AA
6- 6	TCAUAB038MRR0	M	DHHS/Screw caution label	1	AB
6- 7	TINSEB335MRR0	M	Operation manual	1	AD
6- 8	QW-QZB016MRE0	M	High voltage wire A	1	AC

SCREWS,NUTS AND WASHERS

7- 1	LX-BZA041WRE0	M	Special screw	5	AA
7- 2	LX-CZ0052WRE0	M	Special screw	2	AA
7- 3	XHTSD40P12RV0	M	Screw : 4mm x 12mm	1	AA
7- 4	XOTSE40P12000	M	Screw : 4mm x 12mm	8	AA
7- 5	XCBSD30P08000	M	Screw : 3mm x 8mm	3	AA
7- 6	XHTSD40P08RV0	M	Screw : 4mm x 8mm	3	AA
7- 7	LX-CZA070WRE0	M	Special screw (Torx tamper proof screw)	2	AB

HOW TO ORDER REPLACEMENT PARTS

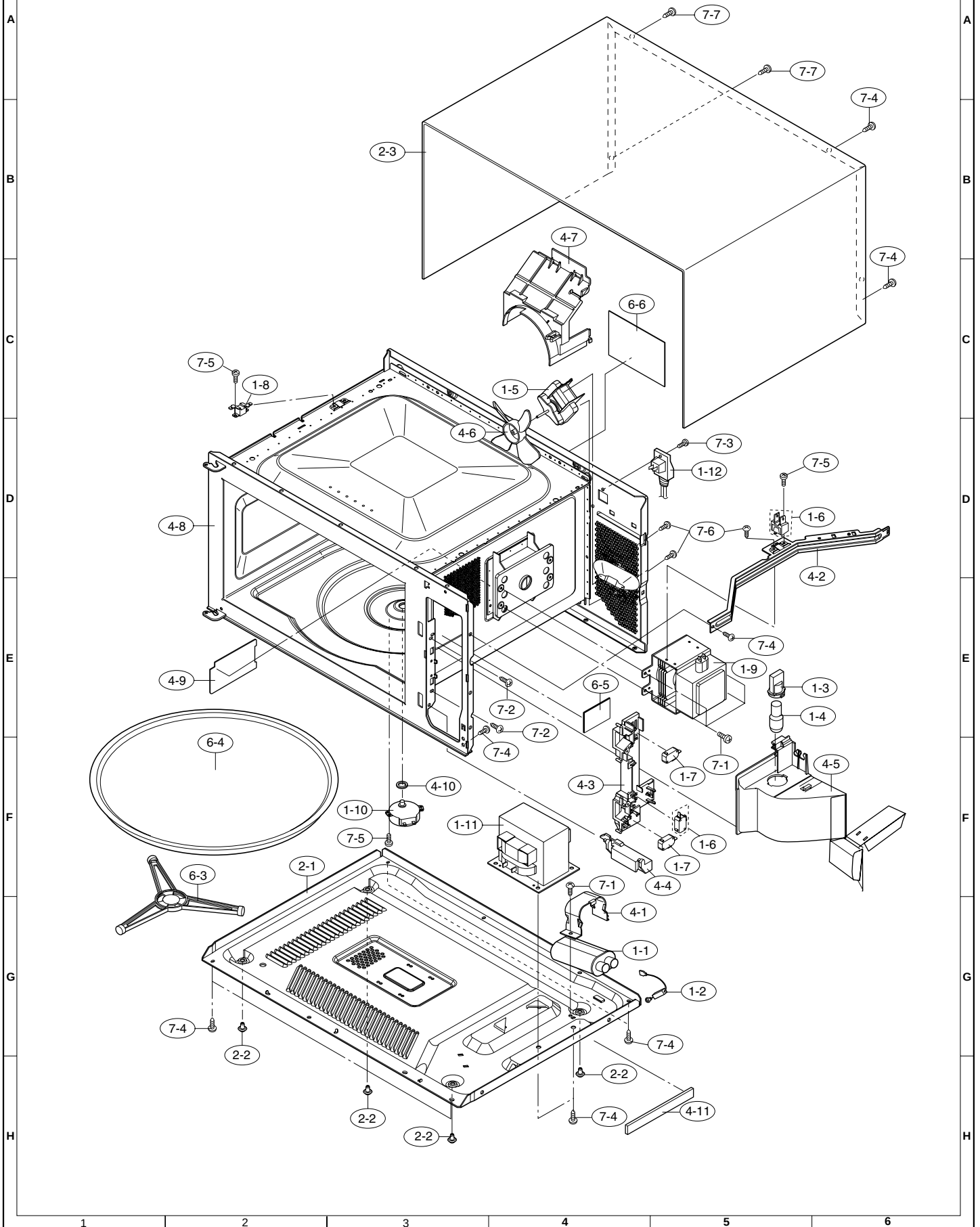
To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

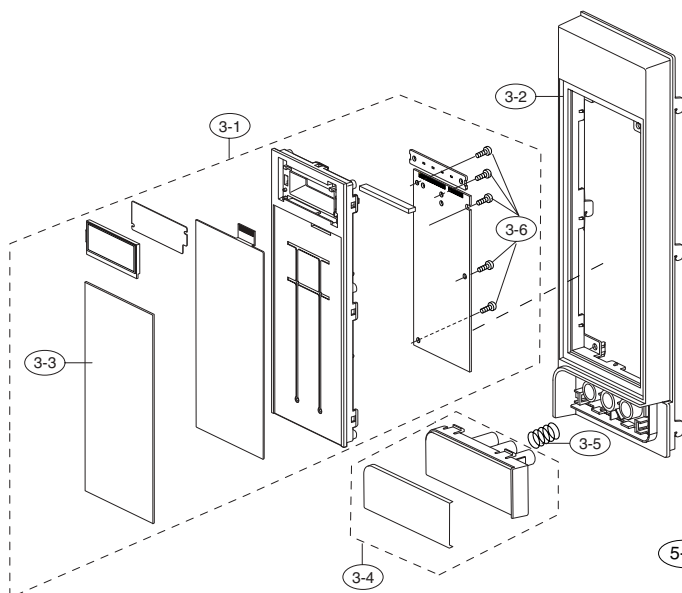
Order Parts from the authorized SHARP parts Distributor for your area.

Defective parts requiring return should be returned as indicated in the Service Policy.

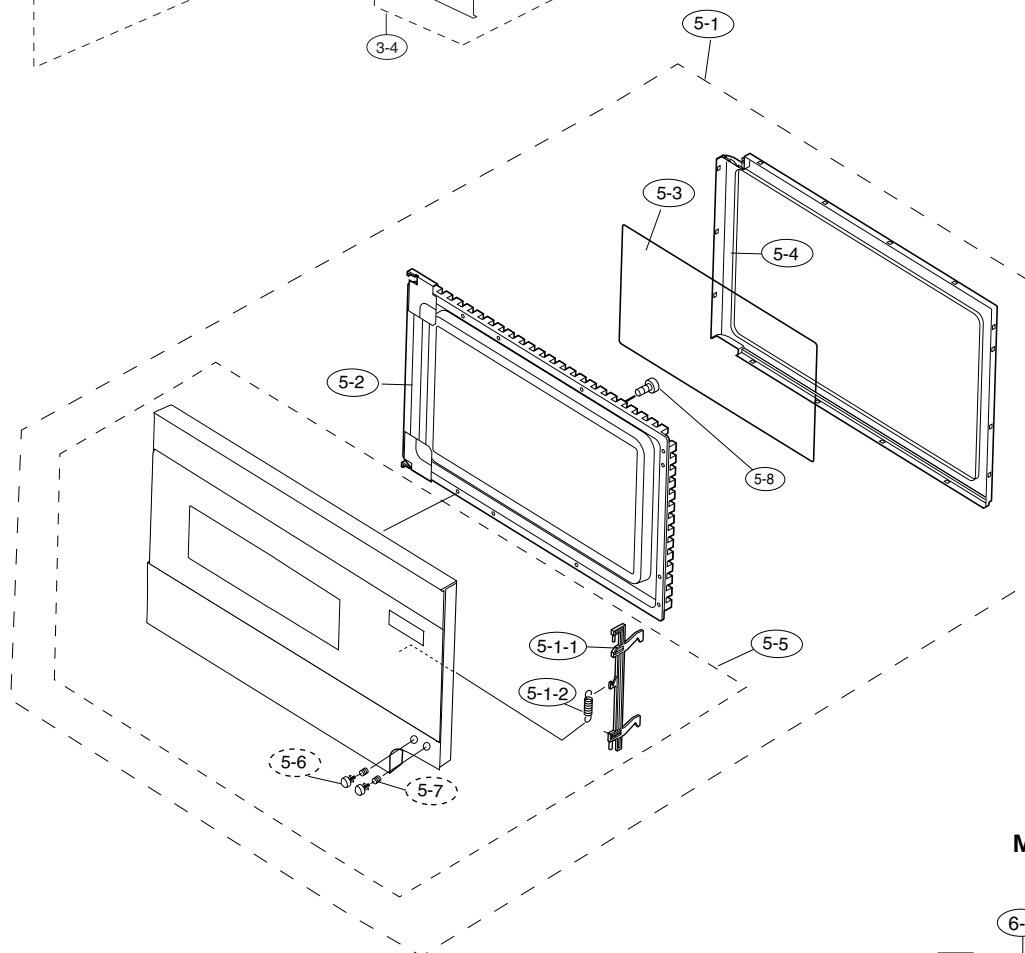
OVEN AND CABINET PARTS



CONTROL PANEL PARTS

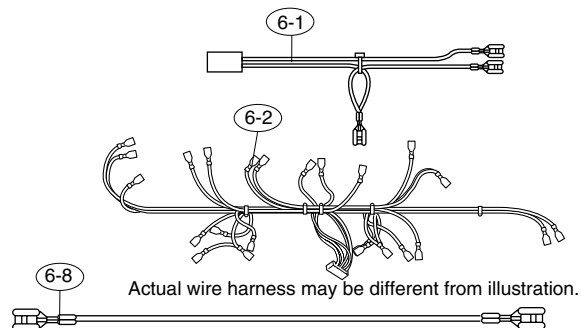


DOOR PARTS

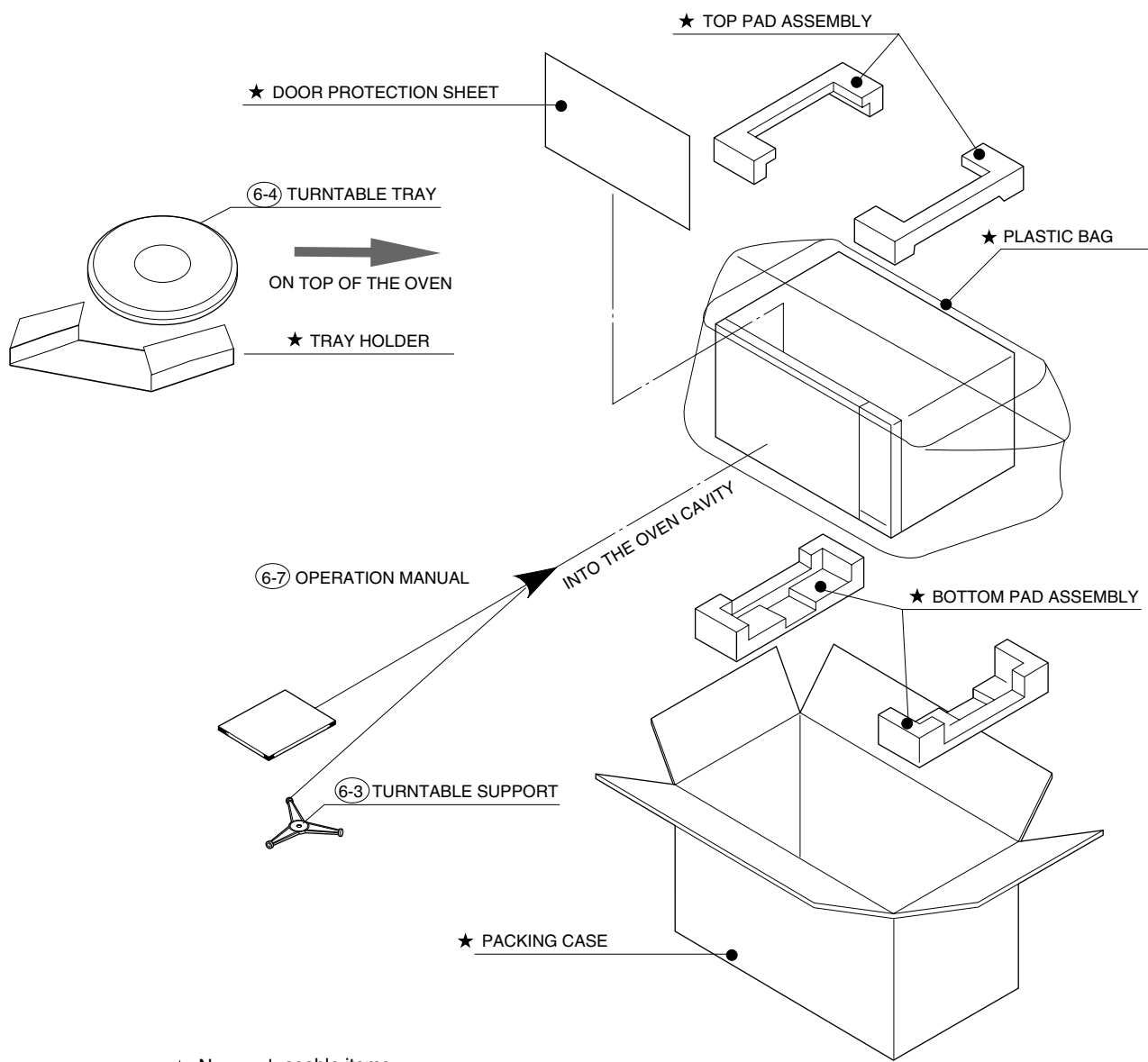


Items 5-6 & 5-7 are not included with assembly 5-1

MISCELLANEOUS



PACKING AND ACCESSORIES



NOTES

NOTES

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